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driving convergence worldwide

Re: NPRM on Signal Boosters (WT Docket No. 10-4, FCC NPRM 11-53)

Dear Sirs

I am pleased to respond to the above Notice of Proposed Rulemaking on the use of Signal Boosters on behalf of members of the Femto Forum.

The Femto Forum is the only organisation devoted to promoting femtocell technology worldwide. It is a not-for-profit membership organisation, with membership open to providers of femtocell technology and to operators with spectrum licences for providing mobile services. The Forum is international, representing over 135 members. Please see www.femtoforum.org for a full list of members.

The Femto Forum recognises the need for regulatory changes in order to control the use of certain types of signal boosters in such a way as to avoid problems of interference into other legitimate users of spectrum. It is understandable that consumer devices capable of improving signal coverage have become popular with many customers who live or work in areas of weaker wireless coverage. However, it is important to distinguish between femtocells and well-designed booster devices, as opposed to the simpler booster devices which are the subject of the NPRM. The attached short article was published via the Femto Forum web site in April 2011 and explains this in a little more detail and is available with other information on femtocells regulatory matters at www.femtoforum.org/femto/regulatory.

We note with approval the intention that the proposed new rules will not apply to femtocells, thereby recognising that such devices have no need for additional regulatory conditions to be placed on them since they are managed by the licensed operator in a manner which ensures freedom from harmful interference into other users. We believe that consumers need to be aware of the important difference between femtocells (or certain other professional grade repeater equipment) and the more inexpensive and crude devices which can be found on the market and which have given rise to numerous interference complaints.

The Femto Forum encourages the FCC to consider these distinctions carefully when imposing any new technical conditions on the use of booster technologies. If we can be of any further assistance during the final stages of the FCC deliberations we would be very pleased to provide more comments as appropriate.

Yours sincerely

Prof. Simon Saunders

Chairman, Femto Forum

Article on Signal Boosters – Femto Forum, April 2011

Recent controversy over uncontrolled signal boosters in USA highlights some key differences between certain types of cellular repeater devices and those using more sophisticated technology such as femtocells.

Recent press coverage has reported on the situation which has arisen in the United States over the use of certain types of commercially available unlicensed signal boosters which customers can use to increase their received signal strength in areas of weak cellular mobile coverage.

Despite the best efforts of mobile network providers, the basic laws of physics governing radio wave propagation mean that cellular coverage can sometimes still be patchy in certain domestic and indoor environments. It is understandable, therefore, that various forms of cellular repeaters or boosters have become popular devices with the general public in order to improve the reliability of their mobile connections when in and around their homes or offices.

As the usage of these devices has grown, however, there have been increasing reports of cases where certain categories of signal boosters have caused sufficient interference to disrupt services of other nearby mobile customers. This has understandably been a concern to cellular operators in the United States who wish to guarantee an interference-free environment for all their customers. CTIA has therefore lobbied the FCC for stricter controls on the use of unlicensed signal boosters. On the other hand, the FCC has also received many petitions from members of the public who fear that a ban on the sale of boosters will rob them of the ability to receive a decent mobile signal in their homes.

We await the result of the FCC's deliberations and while the debate in the USA has had the most press coverage it raises some wider questions which will need to be addressed around the world. In doing so, it is important to differentiate between the various categories of signal boosters which are currently on the market.

Firstly, there are low cost consumer-installed devices which are designed simply to receive, amplify and re-transmit an incoming cellular radio signal at higher power. These devices have been freely available for mobile customers to buy 'off-the-shelf' and use on an unlicensed basis and are not subject to any control by the mobile operator. It is such devices which have usually been the source of the interference problems reported above.

Other, professional grade, repeaters are based on more sophisticated designs which enable network operators to avoid harmful interference since the devices include power detection and control mechanisms. These devices have also been deployed in large numbers in several countries around the world to enhance mobile network coverage, but without giving rise to the problems generated by the low cost consumer devices described above.

An alternative to both these booster technologies is for operators or consumers to deploy femtocell access devices which have also risen greatly in popularity since the advent of 3G cellular services.

As with the professional grade boosters described above, the transmitted power from femtocells can be maintained within levels which will avoid harmful interference into other legitimate spectrum users. In the case of a domestic femtocell, the device can still be purchased and easily installed by consumers, but even in such cases the equipment is designed to ensure that the power level emitted by the femtocell remains under the overall control of the licensed cellular network operator.

Another important difference between femtocells and all other types of signal repeaters or boosters is that femtocells additionally provide more capacity in the cell and thereby higher usable data rates to the customer(s). This is a significant additional benefit which femtocells deployment can bring to both operators and consumers, so that some network operators are already planning to upgrade existing repeater stations to femtocells as a means of improving both coverage and capacity.